SYSTEMS AND METHODS FOR ADAPTIVE BIT LOADING IN A MULTIPLE ANTENNA ORTHOGONAL FREQUENCY DIVISION MULTIPLEXED COMMUNICATION SYSTEM

Abstract of the Disclosure

In an orthogonal frequency division multiplexed (OFDM) system, a transmitter and/or receiver communicate separate data streams on non-orthogonal spatial channels. Each spatial channel may use the same set of OFDM subcarriers and may take advantage of the multipath characteristics of the spatial channel allowing the communication of additional data without an increase in frequency bandwidth. Space-frequency subcarrier modulation assignments may be dynamically assigned on a per subcarrier basis as well as a per spatial channel basis to help maximize the data-carrying capacity of the channel. In some embodiments, each of the spatial channels may be associated with one of a plurality of spatially diverse antennas. In other embodiments, beamforming may be performed to allow the transmission and/or reception of signals within the spatial channels.

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